REMARKS

Applicants submit this Amendment in reply to the Office Action mailed October 4, 2005. At the outset, Applicants propose to amend claims 135 and 154 to include the limitation "wherein the substantially-continuous tread portions are provided about an axis such that during tire rolling, a substantial part of stresses imparted to the substantially-continuous tread portions are discharged along the axis." Support for the changes in claims 135 and 154 may be found in the specification, for example, on page 11, lines 19-22. Accordingly, Applicants submit that their proposed changes to claims 135 and 154 do not raise new issues requiring further consideration by the Examiner.

Currently, claims 39-62 and 111-158 are pending. After entry of Applicants' proposed amendment claims 39-62 and 111-158 will be pending in the above-captioned application.

Claim Rejections Under 35 U.S.C. § 103(a)

In the Office Action mailed October 4, 2005, the Examiner rejected claims 39-53, 55-58, 61-62, 111-125, 127-130, 133-149, 151-154, and 157-158 under 35 U.S.C. § 103 (a) as being unpatentable over Japanese Patent Publication No. 4-1544408 (Japan '408), in view of Great Britain Patent No. 2,224,472 ("Great Britain '472"), Japanese Patent Publication No. 6-247,109 ("Japan '109"), alleged admitted prior art (specification page 3, lines 1-5)("AAPA"), and optionally U.S. Patent No. 2,104,532 to Sommer ("Sommer"). The Examiner also rejected claims 60, 132, and 156 under 35 U.S.C. § 103 (a) as being unpatentable over Japan '408 in view of Great Britain '472, Japan '109, AAPA and optionally Sommers, and further in view of European Patent Application No. 722,851 to Guspodin et al. ("Guspodin"). In addition, the Examiner rejected claims 39-53, 55-58, 111-125, 127-130, 135-149, and 151-154 under 35 U.S.C. § 103 (a) as being unpatentable over Sommer in view of Great Britian '472, AAPA, and optionally at

least one of Hargraves and Japan '109. Further, the Examiner rejected claims 54, 126, and 150 under 35 U.S.C. § 103 (a) as being unpatentable over Sommer in view of Great Britain '472, AAPA, and optionally at least one of U.S. Patent No. 1,996,418 to Hargraves and Japan '109, and further in view of European Patent Application No. 565,270 to Himuro ("Himuro"). The Examiner also rejected claims 59-62, 131-134 and 155-158 under 35 U.S.C. § 103 (a) as being unpatentable over Sommer in view of Great Britian '472, AAPA, and optionally at least one of Hargraves and Japan '109, and further in view of Guspodin.

Applicants respectfully traverse the Examiner's rejection of claims 39 -62 and 111 - 158. Applicants respectfully submit that independent claims 39, 58, 111, 130, 135 and 154 are not obvious over the applied references, at least for the reasons already of record and the reasons discussed below.

To establish a prima facie case of obviousness over a single reference or a combination of references, the Examiner "bears the initial burden of factually supporting any prima facie conclusion of obviousness." *Cf. In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). Specifically, the Examiner must prove such a desire to combine references with "substantial evidence" that is a result of a "thorough and searching" factual inquiry. *In re Lee*, 277 F.3d 1338, 1343-1344 (Fed. Cir. 2002). The Federal Circuit has on numerous occasions stated that to establish a prima facie case of obviousness an Examiner must show that the references, taken alone or in combination, (1) teach all the present claim limitations; (2) would have suggested to or provided motivation for one of ordinary skill in the art to make the claimed invention; and (3) would have provided one of ordinary skill with a reasonable expectation of success in so making. *See In re Vaeck*, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991) (*citing In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988)). "Both the suggestion and the reasonable

expectation of success must be found in the prior art reference, not in the applicant's disclosure." *In re Vaeck* at 1442 (emphasis added).

The references applied in rejecting independent claims 39, 58, 111, 130, 135 and 154 are discussed in greater detail below. The claim rejections are discussed in the order that they appear in the Office Action.

A. Independent Claim 111 & 130

Claim 111 contains the following limitations: "that each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves;" "that each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone" so that "the substantially-continuous tread portions extend from said axially-opposed shoulder zones towards the equatorial plane of the tire to form a structurally stiff grid of elastomeric material portions fitted in with one another" (emphasis added).

With regard to claim 111 and claim 130 (which contains similar language to claim 111), the Examiner argues that while Japan '408 shows tread portions that are not continuous, as claimed, it would have been "obvious of one of ordinary skill in the art to connect the tread portion ... so as to form a structurally stiff grid having slant grooves but no circumferential grooves" in light of the teachings of Japan'109, or Great Britain '472 or Sommer (emphasis in original). See Office Action, page 3. However, as discussed below, simply "connecting" the tread portions on one side of the directional tread of Japan '408's to the tread portions on the other side of the tire is insufficient to form the claimed structurally stiff grid material portions fitted in with one another.

1. Japan '408

At the outset, it is noted that Japan '408 relates to a pneumatic vehicle tire which aims to improve uniformity and prevent "a rain grooves wandering phenomenon" while reducing noise. See Abstract of Japan '408, lines 1-3. According to Japan '408, this is purportedly achieved by providing a tire having a directional pattern with multiple parallel continuous grooves (4) running from the central portion to both shoulder portions on the tread, to form rows or groups of parallel blocks (5) enclosed by the continuous grooves (4). See Abstract of Japan '408, lines 1-3. In contrast, the claimed invention is designed to withstand the presence of extreme stresses (Specification, page 2, lines 6-10), which, as is well known, take place only on dry ground.

As discussed in the Specification of the above-captioned application, in order to achieve the claimed structurally stiff grid and the related technical effects, the key issue is not whether the tread portions on one side of the tread are "connected" to the tread portions on the other side of the tread but, rather, whether or not the substantially-continuous tread portions are mutually "fitted in with one another" as claimed in claims 111 and 130. See Specification, page 4, line 21 (disclosing that the portions are "fitted in with one another"). The required mutual fitting of the substantially continuous axially opposed tread portions is achieved due to the specific arrangement of the transversal grooves and of the substantially-continuous tread portions defined by the claimed limitations that "each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves" and that "each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone."

A result of this specific arrangement is an enhanced structural stiffness of the tread, allowing the substantially-continuous tread portions to absorb all the thermal-mechanical stresses imparted to the tread during tire rolling without bending or too much deforming. The ensuing mobility reduction of the various tread portions, brings about a drastic reduction of the thermal-mechanical degradation phenomena of the elastomeric matrix of the tread also in the presence of extreme stresses. See Specification, page 4, lines 31-32. By drastically reducing the thermal-mechanical degradation phenomena of the elastomeric tread portions, in the presence of extreme stresses, which the claimed tire is subjected to, the tire is allowed to maintain substantially constant performance, independent of the wear conditions of the tread.

One of ordinary skill in the art would have had no motivation to modify the tread pattern of Japan '408 as indicated by the Examiner since the proposed modifications are of features considered to be essential, such as the multiple parallel continuous grooves (4) running from the central portion to both shoulder portions on the tread and enclosing the rows of parallel blocks (5). Moreover, the Examiner's modification of Japan '408 is improper because it would change the principle of operation of a reference. The tire of Japan '408 is specifically designed to have parallel continuous grooves which form block rows. See Abstract of Japan '408, page 1. However, removing the circumferential groove in the center of the tire would interfere with the functioning of the tire by altering the directional pattern, and thus one of ordinary skill would not modify Japan '408 in the manner proposed by the Examiner.

Additionally, as discussed below, Great Britain '472 , Japan '109, nor Sommer teach "a structurally stiff grid of elastomeric material portions fitted in with one another" as claimed in claims 111 and 130.

2. Great Britain '472

Great Britain '472 discloses a tread pattern for further improving the tire performance with respect to drainage and noise development, non-skid facility, absorption of lateral forces, insensitivity when traveling over rails and rolling resistance. See page 2, lines 6-12. According to Great Britain '472, the aforementioned object is achieved by providing a tread pattern in which the essential factor is an arrangement of herringbone-oriented transversal grooves (14, 15) ending at the equatorial plane (x-x) of the tire, so as to form rib profile elements (12, 13) continuously interconnected by means of profile element bridging members or webs (18, 19). See Great Britain '472, page 6, lines 20-27. Great Britain '472 fails to suggest that a different arrangement and orientation of the transversal grooves may achieve a blockless structurally stiff grid of elastomeric material portions fitted in with one another and substantially devoid of mobile portions, such as the bridging members or webs (18, 19), to achieve the different object of maintaining substantially constant, independent of the wear conditions of the tread, the performances in general of a high performance tire and, in particular, its grip on dry ground.

3. Japan '109

Japan '109 also fails to teach or suggest the claimed invention. Japan '109 relates to a pneumatic tire which aims at achieving high wet characteristics and a low noise without reducing other important functions. See Abstract of Japan '109, last two lines. In order to achieve this result, Japan '109 teaches to provide the tread with inclined main grooves (2) having a specific length and inclination and having dead-end terminals near the tread center (2a) and the width ends (2b) which partition the grounding land together with the width ends of the treads and which extend staggering in a slight inclination to a tire equatorial surface, and narrow branch auxiliary grooves (3) extending to the side wall side to the dead-end terminals (2b).

Japan '109, however, fails to teach the following key features necessary to accomplish the claimed stiff grid of elastomeric material portions fitted in with one another: that "each substantially-continuous tread portion defined between defined by the transversal grooves ends at an equatorial groove portion of a same transversal groove" of an axially-opposed group of transversal grooves and that "each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal groove." Therefore, Japan '109 does not teach all the limitations of claim 111 or 130.

4. Sommer

Sommer also teaches away from the claimed arrangement. Sommer relates to an improved tire tread for vehicles of all kind such as bicycles, motor bicycles, automobiles and the like. Sommer is concerned with the object of avoiding the danger of skidding and sliding on wet roads and teaches to achieve this object by providing a tread equipped with alternating grooves and ribs or projections of relatively small width which run across the wheel plane and are substantially radial thereto. See Sommer page 1, left col., lines 1-5 and right col. lines 6-10. In particular, Sommer suggests the critical importance to the width of the alternating grooves and ribs or projections radially running across the wheel plane which should be sufficiently small so as to trigger the technical effect of allowing deformation of each rubber rib or projection towards the next rib under the load in such a manner that a sharp projecting edge will always cut into the mud layer formed on the wet ground. See Sommer page 1, right col., lines 8-17.

Sommer, by the very nature of the features it considers to be essential, fails to disclose a tire for four-wheeled vehicles wherein "each substantially-continuous tread portion should end at an equatorial groove portion of a same transversal groove of an axially-opposed group of

transversal grooves" (emphasis added). Sommer, in fact, discloses that some of the substantially-continuous tread portions defined between the transversal grooves do not end at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves. See Sommer, Figures 8 and 8a which clearly show tread portions 53 ending at a zone beyond the end of some axially-opposed transversal grooves 51.

Sommer also fails to disclose that "each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone" (emphasis added). Sommer, in fact, discloses that some of the transversal grooves do not end at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves. See Sommer, Figures 8 and 8a which clearly show transversal grooves 51 ending at a zone beyond the end of the longest transversal groove 51 of the axially-opposed group of transversal grooves 51).

Sommer also fails to disclose that "the substantially-continuous tread portions extend from said axially-opposed shoulder zones towards the equatorial plane of the tire to form a structurally stiff grid of elastomeric material portions fitted in with one another" (emphasis added). In regard to claims 111 and 130, the Examiner argues that Sommer teaches the claimed "structurally stiff grid" since "structurally stiff" is a relative term. See Office Action, page 10. Applicants note that the feature "structurally stiff" is related to a combination of structural features, namely that "each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves"; that "each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a

longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone"; so that "the substantially-continuous tread portions extend from said axially-opposed shoulder zones towards the equatorial plane of the tire to form a structurally stiff grid of elastomeric material portions fitted in with one another."

Second, and as already noted above, the structurally stiff grid resulting from the aforementioned mutual fitting of the substantially continuous axially-opposed tread portions, allows these portions to absorb all the thermal-mechanical stresses imparted thereto during the tire rolling without bending or too much deforming. See Specification, page 4, line 18 to page 5, line 1.

In sharp contrast, Sommer specifically teaches using a tread that "may be sufficiently deformed" and therefore teaches away from using a "structurally stiff grid." See Sommer, page 2, column 1, lines 40-111.

Thus, even by combining Japan '408 with Great Britain '472, Japan '109, or Sommer, contrary to any motivation to do so, one skilled in the art would not have arrived at the claimed "substantially-continuous tread portions extend from said axially-opposed shoulder zones towards the equatorial plane of the tire to form a structurally stiff grid of elastomeric material portions fitted in with one another."

B. Independent Claims 39 and 58

In the Office Action, the Examiner contends that Figure 2 of Japan '408 discloses that "the longest transverse groove extends across the equatorial plane." See Office Action, page 3. Claims 39 and 58, however, require that not only that the longest groove cross the equatorial plane but also that the groove terminates at "a location between the equatorial plane and the sidewall opposite said one of the shoulder zone." The grooves of Japan '408 (shown in Figures

1-4) are "continuous grooves running from the central portion to both shoulder portions" and therefore terminate in the shoulder portion and not at a location prior to the shoulder zone. See Abstract for Japan '408, page 1.

Additionally claims 39 and 58 require that "each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone." As stated above, the grooves of Japan '408 are "continuous grooves running from the central portion to both shoulder portions" and therefore do not terminate at a predetermined distance from the equatorial groove portion of any axially-opposed transversal groove.

The Examiner contends that Japan '109 shows "some slant grooves crossing the EP in figure 1." See Office Action, page 15. However, independent claims 39 and 58 require not only that some grooves cross the equatorial plane but also that the longest groove extends from the shoulder zone and terminates at a location between the equatorial plane and the sidewall opposite said one of the shoulder zone. In Figure 1 of Japan '109 only the third and the fourth grooves from the left appear to cross the equatorial plane. Significantly, however, Figure 1 of Japan '109 does not show where these grooves originate from or that any of these grooves represent the longest transversal groove. Japan '109 fails to show that each group of the axially opposed groups of transversal grooves has its own longest transversal groove and that this longest transversal groove extends from said one of the axially opposed shoulder zones and terminates at a location between the equatorial plane and the sidewall opposite said one of the axially-opposed shoulder zones. See Japan '109, Figures 1 and 3. Therefore, Japan '109 also does not teach all

the limitations of claims 39 and 58. Claims 39 and 58 are therefore allowable for at least these reasons.

C. Independent Claims 135 and 154

Applicants have amended claims 135 and 154 to recite that "a substantial part of stresses imparted to the substantially-continuous tread portions are discharged along the axis" (emphasis added) to further emphasize the technical consequences of the claimed tread arrangement. With regards to claims 135 and 154, the Examiner argues that "Great Britain '472's teaching to connect so that the resulting profile has relatively high absorption of lateral forces and nondeformability of shape." See Office Action, page 7. However, as discussed above in regard to claim 111, modifying Japan '408 in combination with Great Britain '472 to "connect" the tread portions is improper. Further Great Britain '472 fails to teach substantially -continuous tread portions which are "provided about an axis" and that stresses are "discharged along the axis." Accordingly, for similar reasons Japan '408 and Great Britain '472 also fail to teach the claimed limitation "wherein the substantially-continuous tread portions are provided about an axis such that during tire rolling, a substantial part of stresses imparted to the substantially-continuous tread portions are discharged along the axis" as recited in claims 135 and 154.

D. Independent Claim 39

1. Sommer

In the Office Action, the Examiner states that Figure 8 and 8a of Sommer discloses the claimed limitation "the longest transversal groove of the axially opposed of traversal grooves extend from said one of the axially opposed shoulder zones and terminates at a location between the equatorial plane and the sidewall opposite said one of the shoulder zone." See Office Action, page 10. However, as shown in Figure 8 of Sommer, grooves (51) of Sommer do not cross the

equatorial plane. Instead they terminate at the center plane. See also, Sommer, page 3, column 1, lines 2-3 which describes that the grooves run "from the side of the tire to the center plane" and lines 12-17 which describe that the tread arrangement has "what may be described as a rib of small width substantially running parallel with the center plane of the tire." Therefore, Sommer does not teach all the limitations of claims 39 and 58.

2. Hargraves

In rejecting claim 39, the Examiner asserts, as an alternative to Sommer, that it would have been obvious to rearrange Sommer's inclined transversal grooves in view of Hargraves. See Office Action, page 10. Hargraves relates to a pneumatic vehicle tire which aims at achieving a compromise between a number of different desirable characteristics devising, more specifically, a tire tread which will avoid tendency to circumferential flex cracking, and at the same time have ample non-skid, traction and noiseless characteristics. See Hargraves, page 1, left hand col., lines 5-44).

According to Hargraves, the aforementioned object is achieved by providing a tread pattern in which an arrangement of groups of inclined transversal grooves (17, 22) forms triangular shaped groups of parallel diagonal ribs (16, 21) arranged in two circumferential series with their apexes in one lateral margin of the tread as best shown in figures 1, 2 and 5. Most importantly, the triangular shaped groups of parallel diagonal ribs (16, 21), which constitute one of the essential features of the invention disclosed by Hargraves, are delimited either by a V-shaped transversal groove (17a) or by a continuous zigzag shaped transversal groove (22) which axially crosses the entire tread band and forms near or at the edges of the tread (see figure 2) sharp-edged material portions (at the lower end of groove 17a or at the apexes of the triangular shaped groups of parallel diagonal ribs). Hargraves shows a longest groove which extends from

one sidewall to the other (see 17 in Fig. 1 and also see Fig. 5). The longest groove necessarily terminates in the shoulder portion. Hargraves teaches quite a different structure and arrangement of the transversal grooves and of the elastomeric material portions defined between the same, unable to achieve the technical effects of the claimed tire. Any modification of the structure taught by Hargraves so as to modify, for example, the arrangement of the transversal grooves by eliminating the V-shaped transversal groove (17a) or the continuous zigzag shaped transversal groove (22) would render the tire inoperable for its intended purpose.

Accordingly, Hargraves also fails to teach the claimed groove that terminates at "a location between the equatorial plane and the sidewall opposite said one of the shoulder zone." Therefore, Hargraves does not teach all the limitations of claim 39. Please also note that while the Examiner only specifically discussed claim 39, claim 58 contains the same limitation and is thus distinguishable for similar reasons as those discussed above in regards to claim 39.

Additionally, Hargraves does not each or suggest the subject matter of independent claims 111, 130, 135 and 154, and the Examiner does not rely on Hargraves for such teachings.

E. Independent Claims 111 & 130

In the pending Office Action, the Examiner is of the opinion that the "structurally stiff grid" would read on the profiling shown by Sommer in Fig. 8, 8a, "structurally stiff" being a relative expression failing to define a stiffness different from that disclosed by Sommer. See Office Action, page 10. As already noted above, the Examiner's reading of Sommer is untenable. The feature "structurally stiff" is related in the present case to a combination of the aforementioned structural features. Also, as noted above, the structurally stiff grid resulting from the aforementioned mutual fitting of the substantially continuous axially-opposed tread portions, allows these portions to absorb without bending nor too much deforming, all the thermal-

mechanical stresses imparted thereto during the tire rolling. See Specification, page 4, line 18 to page 5, line 1.

In the profiling shown in Fig. 8, 8a the width of the alternating grooves and ribs or projections radially running across the wheel plane is disclosed as being sufficiently small so as to trigger the technical effect of allowing deformation of each rubber rib or projection towards the next rib under the load in such a manner that a sharp projecting edge will always cut into the mud layer formed on the wet ground. See Sommer, page 1, right col., lines 8-17. The profiling shown by Sommer in Fig. 8, 8a can by no means be read on the claimed "structurally stiff grid" in the context of the present invention. By contrast, Sommer clearly teaches away from the claimed "structurally stiff grid" and the specific arrangement of the transversal grooves and of the mutually fitted substantially-continuous tread portions, since it suggests to use a tread pattern which triggers an opposite technical effect with respect to that achieved by the claimed tire, i.e. mobility of the tread portions defined between consecutive transversal grooves instead of rigidity. Thus, even by combining Sommer with any other reference on record contrary to any motivation to do so, one of ordinary skill in the art would have never arrived at the claimed tire having mutually fitted substantially continuous tread portions and forming a structurally stiff grid of elastomeric material portions.

F. Independent Claims 135 & 154

In regard to claims 135 and 154, the Examiner argues that at least part of the stresses must be discharged along the axis when Sommer's tire rolls. See Office Action, page 10. However, claims 135 and 54 have been amended to recited that a "substantial part of stresses imparted" must be discharged along the axis The Examiner has not pointed to any teaching in Sommer that discloses the stresses being imparted to the tread portion, let alone that a

"substantial part of stresses" imparted to the tread are "discharged along the axis." Additionally, Sommer teaches that the ribs deform under the load of the wheel and the ribs lean against each other. See Sommer, page 2, col. 1, lines 52-59. Therefore, Sommer teaches away from the stresses being discharged along the axis since in Sommer the stresses are not uniformly discharged. Accordingly, Sommer fails to teach the claimed "wherein the substantially-continuous tread portions are provided about an axis such that during tire rolling, a substantial part of stresses imparted to the substantially-continuous tread portions are discharged along the axis" as recited in claims 135 and 154.

G. Guspodin & Himuro

Guspodin, and Himuro do not teach or suggest all the subject matter of independent claims 39, 58, 111, 130, 135 and 154, and the Examiner does not rely on these references for such teachings. Guspodin is relied on to teach the use of different front and rear tires as claimed in dependent claims 60, 132 and 156 (See Office Action, page 8) and Himuro is relied on to teach circumferential grooves which cross inclined grooves as claimed in dependent claims 54, 126, and 150 (See Office Action, page 14).

Accordingly, Applicants submit that independent claims 39, 58, 111, 130, 135 and 154 are allowable over the references applied in the Office Action and claims 40-57, 59-62, 112-129, 131-134, 136-153, and 155-158 are allowable due to their dependence from claims 39, 58, 111, 130, 135 and 154, respectively.

Claim Scope

In discussing the specification, claims, abstract, and drawings in this Amendment, it is to be understood that Applicants are in no way intending to limit the scope of the claims to any exemplary embodiments described in the specification or abstract and/or shown in the drawings.

Rather, Applicants believe that Applicants are entitled to have the claims interpreted broadly, to the maximum extent permitted by statute, regulation, and applicable case law.

Summary

In view of the foregoing amendments and remarks, Applicants submit that this Amendment does not raise any new issues requiring further consideration and/or search. Accordingly, Applicants respectfully request entry of this Amendment, reconsideration and reexamination of this Application, and a timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

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Dated: February 2, 2006

By: _____
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